

WHAT IS CLAIMED IS:

- 1           1.       An information processing system, comprising:  
2                   a first processor, receiving input data and creating a pixel data stream  
3 provided over a first channel and a second channel, the first channel providing a signal to  
4 affect the output of a pixelated display, the second channel including location information  
5 and symbol information; and  
6                   a second processor coupled to the first processor, the second processor  
7 receiving the location information and the symbol information from the first processor,  
8 and the second processor receiving the input data, the second processor computes a  
9 derived version of the inputs based on the location information and the symbol  
10 information.
- 1           2.       The information processing system of claim 1, wherein the first processor  
2 comprises a symbol generator.
- 1           3.       The information processing system of claim 1, wherein the first processor  
2 comprises a graphics engine.
- 1           4.       The information processing system of claim 1, wherein the pixelated  
2 display comprises a liquid crystal display.
- 1           5.       The information processing system of claim 1, wherein the pixelated  
2 display comprises an information source for a heads-up display (HUD).
- 1           6.       The information processing system of claim 1, wherein the input data  
2 comprises aircraft sensor data.
- 1           7.       The information processing system of claim 1, wherein the input data  
2 comprises aircraft control surface data.
- 1           8.       The information processing system of claim 1, wherein the derived  
2 version is computed using an inverse process.

1           9.     The information processing system of claim 1, wherein the second  
2 processor compares the input data and the derived version of the inputs.

1           10.    The information processing system of claim 1, further comprising:  
2                a third channel over which pixel data is provided from the first processor.

1           11.    The information processing system of claim 10, wherein the first channel  
2 corresponds to a red color channel.

1           12.    The information processing system of claim 1, wherein the second channel  
2 corresponds to a blue color channel.

1           13.    The information processing system of claim 1, wherein the third channel  
2 corresponds to a green color channel.

1           14.    The information processing system of claim 1, further comprising:  
2                a third channel over which pixel data is provided from the first processor;  
3 and  
4                a fourth channel over which pixel data is provided from the first processor.

1           15.    The information processing system of claim 14, wherein the fourth  
2 channel corresponds to a symbol monitoring channel.

1           16.    A method of providing integrity checking for a pixelated display device,  
2 comprising:  
3                receiving input data by a first processor;  
4                generating drawing instructions for a graphics engine;  
5                outputting pixel data to a detector;  
6                receiving, by a display, at least some of the pixel data over a first channel;  
7                receiving over a second channel, by a symbol monitor, at least some of the  
8 pixel data; and  
9                receiving the input data by the symbol monitor.

1           17.    The method of claim 16, further comprising:

2                   generating derived input information based on the pixel data received over  
3   the second channel.

1           18.     The method of claim 17, further comprising:  
2                   comparing the derived input information with the input information.

1           19.     The method of claim 18, further comprising:  
2                   issuing an error warning if the comparison is not within a predefined  
3   threshold.

1           20.     The method of claim 18, further comprising:  
2                   canceling the drawing instructions if the comparison is not within a  
3   predefined threshold.

1           21.     An information processing system, comprising:  
2                   a first processing means, receiving input data and creating a pixel data  
3   stream provided over a first channel and a second channel, the first channel providing a  
4   signal to affect the output of a display, the second channel including location information  
5   and symbol information; and  
6                   a second processing means coupled to the first processing means, the  
7   second processing means receiving the location information and the symbol information  
8   from the first processing means and the second processing means receiving the input  
9   data, the second processing computes a derived version of the inputs based on the  
10   location information and the symbol information.

1           22.     The information processing system of claim 21, wherein the first  
2   processing means comprises a symbol generator.

1           23.     The information processing system of claim 21, wherein the first  
2   processing comprises a graphics engine.

1           24.     The information processing system of claim 21, wherein the pixelated  
2   display comprises a liquid crystal display.

1           25.    The information processing system of claim 21, wherein the pixelated  
2 display comprises an information source for a heads-up display (HUD).

1           26.    The information processing system of claim 21, wherein the input data  
2 comprises aircraft sensor data.

1           27.    The information processing system of claim 21, wherein the input data  
2 comprises aircraft control surface data.

1           28.    The information processing system of claim 21, wherein the derived  
2 version is computed using a matrix inversion process.

1           29.    The information processing system of claim 21, wherein the second  
2 processing means compares the input data and the derived version of the inputs.

1           30.    The information processing system of claim 21, further comprising:  
2                   a third channel over which pixel data is provided from the first processing  
3 means.

1           31.    The information processing system of claim 30, wherein the first channel  
2 corresponds to a red color channel.

1           32.    The information processing system of claim 30, wherein the second  
2 channel corresponds to a blue color channel.

1           33.    The information processing system of claim 30, wherein the third channel  
2 corresponds to a green color channel.

1           34.    The information processing system of claim 21, further comprising:  
2                   a third channel over which pixel data is provided from the first processing  
3 means; and  
4                   a fourth channel over which pixel data is provided from the first  
5 processing means.